

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

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BOARD OF PATENT APPEALS
AND INTERFERENCES

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LAVAUGHN F. WATTS, JR.

Appeal No. 2000-0434
Application 08/568,904

ON BRIEF

Before JERRY SMITH, BARRETT and GROSS, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 2, 3, 5, 6, 9, 17-21, 23, 30, 31, 34-39, 41-43, 45-47, 49-51, 53-55, 57-59, 61-63, 65-67 and 71-73, which constitute all the claims remaining in the application.

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The disclosed invention pertains to an apparatus for controlling the frequency of clock signals operating a computer to keep the temperature of the computer within an appropriate operating range.

Representative claim 5 is reproduced as follows:

5. An apparatus, comprising:

a provision for user input;

a provision for output;

a central processing unit (CPU) coupled to said user input and output;

a monitor for monitoring temperature within said apparatus;
and

a clock manager adapted to receive a control signal from said monitor, said clock manager selectively stopping clock signals from being sent to said central processing unit (CPU) when said monitored temperature rises to a level at and above a selected reference temperature level and said CPU is not processing critical I/O.

The examiner relies on the following references:

Chen et al. (Chen)	5,422,806	June 06, 1995
Gephardt et al. (Gephardt)	5,493,684	Feb. 20, 1996
		(filed Apr. 06, 1994)
Kikinis	5,502,838	Mar. 26, 1996
		(filed Apr. 28, 1994)
Hollowell et al. (Hollowell)	5,590,061	Dec. 31, 1996
		(filed May 12, 1994)

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Claims 2, 3, 5, 6, 9, 30, 31, 34-39, 41-43, 45-47, 49-51, 53-55, 57-59, 61-63, 65-67 and 71-73 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Hollowell in view of Kikinis and Gephardt. Claims 17-21 and 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Hollowell in view of Kikinis and Chen.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would have suggested to one of ordinary skill in

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the art the obviousness of the invention as set forth in each of the claims on appeal. Accordingly, we affirm.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness.

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Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellant have been considered in this decision. Arguments which appellant could have made but chose not to make in the brief have not been considered and are deemed to be waived by appellant [see 37 CFR § 1.192(a)].

We consider first the rejection based on Hollowell, Kikinis and Gephardt. The examiner cites Hollowell as teaching a thermal control system for controlling the power applied to a computer. The system of Hollowell stops the application of power supplied to the CPU when the monitored temperature of the CPU exceeds a threshold value rather than adjusting the frequency of clock signals supplied to the CPU. The examiner cites Kikinis as teaching a thermal control system for an integrated circuit in which the system adjusts the frequency of clock signals supplied

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to components to maintain the temperature of the components within a desirable operating range. The examiner finds that it would have been obvious to the artisan to maintain thermal control in Hollowell by adjusting the frequency of clock signals as taught by Kikinis. The examiner finds that the combination of Hollowell and Kikinis meets the claimed invention except for the claimed feature of not stopping the clock signals when the CPU is processing critical I/O. The examiner cites Gephardt as teaching a power management system for a computer in which clock frequencies are controlled based on the type of activity performed by the computer. The examiner finds that it would have been obvious to the artisan to stop the clock of the Hollowell-Kikinis combination only when the CPU is not processing critical I/O to prevent losing vital information [answer, pages 3-5].

With respect to each of the independent claims, appellant argues that Gephardt fails to teach or suggest any means for detecting critical activity. Appellant points to the background of the invention in Gephardt in which Gephardt notes that prior art systems did not treat detected activities differently. Appellant also asserts that frequency control in Gephardt is based on a level of activity and not on temperature as claimed. Appellant then cites case law and makes the general conclusion

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that the applied prior art does not teach or suggest the claimed invention [brief, pages 7-11].

The examiner responds that the disclosure in Gephardt of primary and secondary activities teaches the detection of a "critical activity." The examiner notes that Gephardt was not relied on for teaching power control responsive to temperature measurements. The examiner notes that Gephardt was cited only to show that there are critical activities during which power to the computer cannot be stopped [answer, pages 9-10].

Appellant responds that there is no mention of "critical activity" in Gephardt [reply brief].

We will sustain the examiner's rejection with respect to independent claims 5, 6 and 9. We first note that we agree with the propriety of the examiner's combination of the applied prior art. Hollowell and Kikinis both relate to the control of heat generation within a computer in order to maintain the temperature within a desirable operating range. These two references also teach that heat control can be achieved by either power control or clock frequency control. We agree with the examiner that it would have been obvious to the artisan to replace the power control of Hollowell with the frequency control of Kikinis to

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maintain the temperature of the computer within the desirable operating range.

We also agree with the examiner that the designation of activities in Gephardt as primary activities and secondary activities discloses that some activities are considered to be more critical than other activities. The primary activities of Gephardt clearly correspond to the critical activity of the claimed invention. Gephardt discloses that primary activities cause the computer to enter the ready state regardless of its current state [column 3, lines 22-24]. Therefore, the computer cannot be shut down when a primary activity is occurring. Gephardt also discloses that the primary activities include the various I/O activities such as parallel port activities, serial port activities, floppy disk activities and hard disk activities [column 9, lines 27-31]. Therefore, Gephardt teaches that a computer should not be shut down while these primary (critical) I/O activities are taking place. We agree with the examiner that it would have been obvious to the artisan to modify the Hollowell-Kikinis combination to take into account the critical I/O activities which are taking place as taught by Gephardt.

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With respect to the dependent claims, we note that appellant purports to have argued each of the dependent claims separately. Appellant's arguments with respect to the dependent claims are either to make a broad general statement that the applied prior art does not suggest the dependent claim in combination with the claim from which it depends, or to make a broad general statement that the applied prior art does not teach or suggest the limitations of the dependent claim with no supporting rationale or analysis. In our view, the examiner's rejection is sufficient to establish a prima facie case of obviousness [answer, pages 3-7]. Neither of the two types of appellant's arguments noted above constitutes a persuasive argument that the rejection is in error. In other words, appellant's arguments with respect to each of the dependent claims do not overcome the examiner's prima facie case of obviousness.

For the reasons discussed above, we sustain the examiner's rejection of all claims based on Hollowell, Kikinis and Gephardt.

We now consider the rejection based on Hollowell, Kikinis and Chen. Hollowell and Kikinis have been discussed above. The examiner notes that Hollowell and Kikinis do not teach predicting

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activity and temperature levels within a computer. The examiner cites Chen as teaching that it was known to predict activity levels within a computer and use these predictions for automatic control. The examiner finds that it would have been obvious to the artisan to control the temperature in the Hollowell-Kikinis combination based on predicted activity as taught by Chen [answer, pages 7-8].

Appellant argues that no temperature measurements are needed or made in Chen. Appellant also repeats many of the arguments that were considered above [brief, pages 17-20].

The examiner responds that the predictive control in Chen controls the temperature within the computer based on a selected model of computer operation [answer, pages 10-11]. Appellant responds by repeating the arguments made in the brief [reply brief].

We will sustain the examiner's rejection of claims 17-21 and 23. In our view, the question here is whether it would have been obvious to the artisan to replace the actual temperature measurements of Hollowell or Kikinis with predicted temperature measurements as taught by Chen. Appellant is correct that Chen does not directly measure temperature, but instead, Chen measures parameters which are directly related to temperature. In other

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words the measurement of time and frequency in Chen can be used to compute an estimated temperature. Thus, temperature in Chen is indirectly measured. Kikinis notes that a measurement of temperature can be made by directly sensing temperature or by measuring a parameter which is related to temperature [column 3, lines 19-41]. We find that it would have been obvious to the artisan to measure the temperature in Hollowell or Kikinis using an indirect measurement as taught by Kikinis. We agree with the examiner that it would have been obvious to the artisan to control temperature in the Hollowell-Kikinis combination using a predictive measure of temperature as taught by Chen. Therefore, we sustain the rejection of claims 17-21 and 23.

In summary, we have sustained each of the examiner's rejections of the claims on appeal. Therefore, the decision of the examiner rejecting claims 2, 3, 5, 6, 9, 17-21, 23, 30, 31, 34-39, 41-43, 45-47, 49-51, 53-55, 57-59, 61-63, 65-67 and 71-73 is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

Gerry Smith
JERRY SMITH

JERRY SMITH
Administrative Patent Judge

Lee E. Barnett

LEE E. BARRETT
Administrative Patent Judge

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